

[54] **APPARATUS FOR SAMPLING PESTICIDE RESIDUES IN RUN-OFF WITH CONTROL OF SAMPLE PUMP AND DISTRIBUTOR VALVE**

[75] Inventors: **Mark W. Sandstrom**, Boulder, Colo.;
James C. Jelinski, Bay St. Louis,
Miss.; **Doreen Y. Tai**, Slidell, La.

[73] Assignee: **The United States of America as
represented by the Secretary of the
Interior**, Washington, D.C.

[21] Appl. No.: **557,812**

[22] Filed: **Jul. 26, 1990**

[51] Int. Cl.⁵ **G01N 1/18; B01D 21/30**

[52] U.S. Cl. **210/134; 73/171;
73/863.01; 73/863.21; 73/863.24; 73/864.34;
137/566; 137/625.11; 422/81; 436/39; 436/178**

[58] Field of Search **73/863.01, 863.02, 863.21,
73/863.23, 863.24, 863.73, 863.86, 864.34,
863.61, 863.72, 863.83, 864.91; 137/624.13,
625.11, 625.16, 565.1, 566; 210/85, 139, 141,
143, 296, 424, 511; 436/178, 180; 422/82, 101,
103, 261**

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,896,673	7/1975	Andouze et al.	73/864.34
3,901,084	8/1975	Brailsford	73/864.35
4,022,059	5/1977	Schontzler et al.	73/863.02
4,140,011	2/1979	Krupa et al.	73/171
4,533,643	8/1985	Bell et al.	73/863.23
4,644,807	2/1987	Mar	73/864.91
4,732,037	3/1988	Daube, Jr. et al.	73/171
4,871,675	10/1989	Coupek et al.	73/864.91
5,016,196	5/1991	Nelson et al.	73/171

FOREIGN PATENT DOCUMENTS

2641801 2/1978 Fed. Rep. of Germany ... 73/864.34

2277287 1/1976 France 137/625.11
54-116997 9/1979 Japan 422/103

OTHER PUBLICATIONS

Publication Article "Advances toward automation of pesticide residue determinations", Karlhuber et al., Analytical Chemistry vol. 47, No. 7, pp. 1094-1102, Jun. 1975.

Publication Article "Automated System for collecting water samples in proportion to stream flow rate", Claridge, New Zealand Journal of Science, vol. 18, No. 2, pp. 289-296, Jun. 1975.

Publication by Wilkinson, "An Automatic Sampler-for Intermittent Flows of Water", Instrument Practice, vol. 8, No. 5, May 1954.

Primary Examiner—Robert A. Dawson

Assistant Examiner—Joseph Drodge

Attorney, Agent, or Firm—E. Philip Koltos

[57] **ABSTRACT**

A water sampling device for field use operates in cleaning and sampling modes and includes a distributor valve that provides selective connection of a sample pump to a plurality of collection units so that a plurality of samples can be taken. The collection units are composed of a filter for removing particulate matter, a liquid-solid extraction cartridge, and a storage bottle. Water samples are automatically collected from a river or other water source, and then pumped immediately through the liquid-solid extraction cartridge which extracts and retains the contaminants from the water. Once the contaminants have been extracted into the cartridge, the sample is chemically stable and resistant to degradation, thereby eliminating the need for much of the special handling of samples that was previously required with field units.

13 Claims, 2 Drawing Sheets

